

STUDIES IN DIASPININE PYGIDIA.

By E. W. STAFFORD.

Up to the present time the practice of staining Coccidæ in toto as an aid to taxonomic work has not been much adopted on this continent. Newstead and Green in their great Monographs, recommend the use of stains, and in their preparation of specimens, stains are used.

The Diaspiinae are classified for the most part on characters of the pygidia of the adult females. In my work with scale insects I found that one's first tentatives toward the practice of staining are apt to be crowned with little positive success, but that after a little experimentation and practice, these artificial colors may be made to enhance the value of the mounts to such an extent as well to compensate for the extra labor involved in their application.

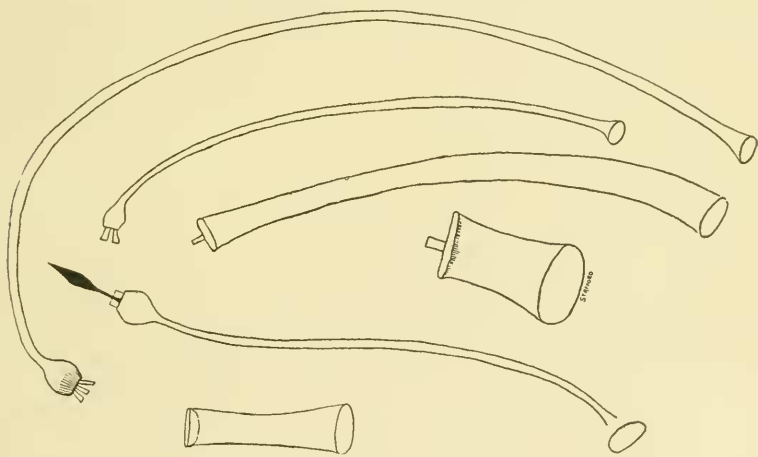


FIG. 1—Types of Tubular Glands

The chitinous paraphyses and the true marginal spines are not shown to better advantage in stained specimens than in those unstained.

The marginal plates, the dorsal pores and the circum-gential pores are much more clearly defined in properly stained specimens than in those which have not been stained.

The delicate tubular glands, which are practically invisible in unstained specimens, may be rendered clearly visible by proper staining. These tubules are in general different in different species and constant in the same species. Though they have been ignored by us, they nevertheless present a potentially valuable addition to our list of classificatory characters for the group.

TECHNIQUE.

Females were removed from under their waxy coverings and placed in strong cold aqueous solution of potassium hydroxide and allowed to remain until perfectly clear. This may require from two to five days. The specimens were then placed in a copious quantity of water for a couple of hours to remove all of the potassium therefrom. From the water they were transferred to ninety-five per cent alcohol. From the alcohol, after plenty of time for dehydration, they were transferred to an alcoholic solution of Magentarot, (magenta-red), and allowed to remain about one hundred hours, or until they showed a purple color, but still remained translucent. They then were placed for a few seconds in absolute alcohol to wash off superfluous stain and transferred to xylol therefrom.

After a couple of hours they were mounted in balsam or glycerine jelly. The above process entails little labor but extends over considerable time.

The specimens may be boiled in strong potassium hydroxide for from fifteen minutes to half an hour, to procure the same degree of clarity and may be stained in Hämatoxylin solution von Delafield for ten or fifteen minutes. Thus the time of preparation may be much shortened. The former process has, however, given more desirable results.

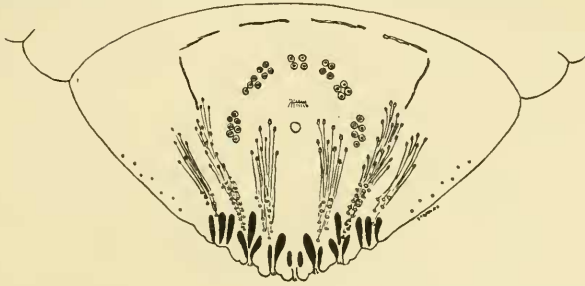
DORSAL-PORES.

The pygidial pores in the Diaspinæ fall into two classes:—Larger, usually elliptic, grouped “macropores,” and smaller or minute, circular, single, paired or grouped “micropores.”

SPECIES.

Chrysomphalus obscurus:

Micropores, about seven on each lateral margin.

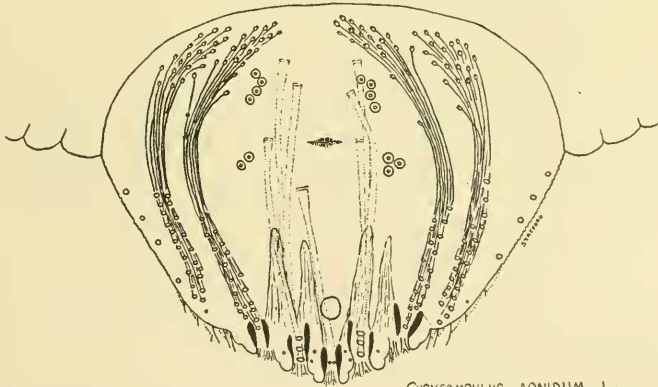


CHRYSOMPHALUS OBSCURUS Comst

Macropores in six groups, giving rise to slender capitate, bi-pistionate tubules. Tubules uniform and in six compact sheaves corresponding to the six groups of macropores from which they arise.

Chrysomphalus aonidum:

Micropores, ten; two between median lobes, two in median lobe, one in second lobe, one on margin beyond third.



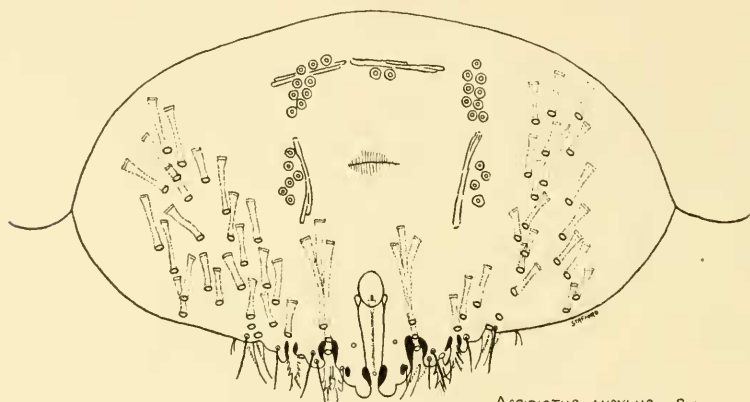
CHRYSOMPHALUS AONIDUM Linn

Macropores, numerous and in rows. Tubules of two types; one long, sub cylindric, gradually expanding toward its truncate apex arises from between median lobes. Three similar to above, longer, arise from three macro pores between median and second

lobe. About twenty, long, filiform, capitate, tripistionate in compact sheaf, arise from double row of macropores between second and third lobe. A group in all ways similar to above, arises from double row of macropores arising from beyond third lobe. Four, apparently non-tubulate pores close to each lateral margin.

***Aspidiotus ancylus*.**

Micropores three—one between median lobes giving rise to slender funnel form tubule uni-pistionate at truncate apex, one in median lobe.

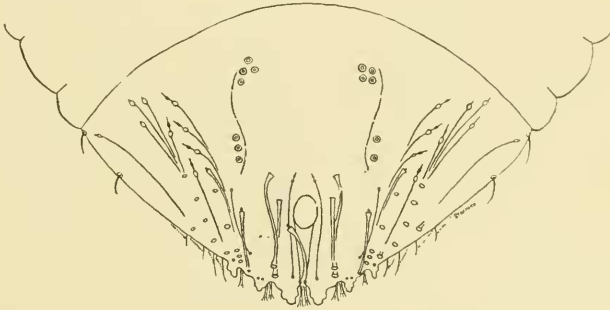


ASPIDIOTUS ANCYLUS Putn

Macropores numerous, scattered, giving rise to short sub cylindric truncate tubules, which are non-pistionate. Three arising from between median and second lobes are longer than the others.

Aspidiotus brittanicus.

Micropores fourteen—one in median lobe and one between second and third, give rise to minute, filiform, capitate, and sometimes stylate tubules, two in second lobe, one in third lobe, one cephalad of lateral margin of vaginal opening.

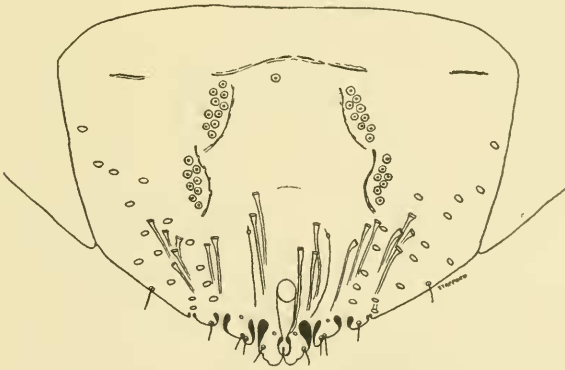


ASPIDIOTUS BRITTANICUS

Macropores scattered. Tubules from same, not uniform. Funnel form with and without terminal pistons, and capitate, armed terminally with fusiform stylets.

Aspidiotus forbesi.

Micropores four—one in median lobe, one in second lobe.

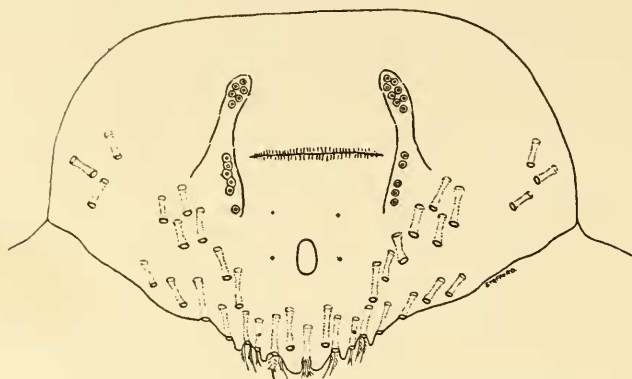


ASPIDIOTUS FORBESI Johns

Macropores scattered. Tubules mostly slender, expanded toward their truncate apices and non-pistionate. Filiform, capitate, pistonate tubules sometimes visible.

***Aspidiotus hederæ*.**

Micropores six—one between second and third lobes, two at side of anal aperture.

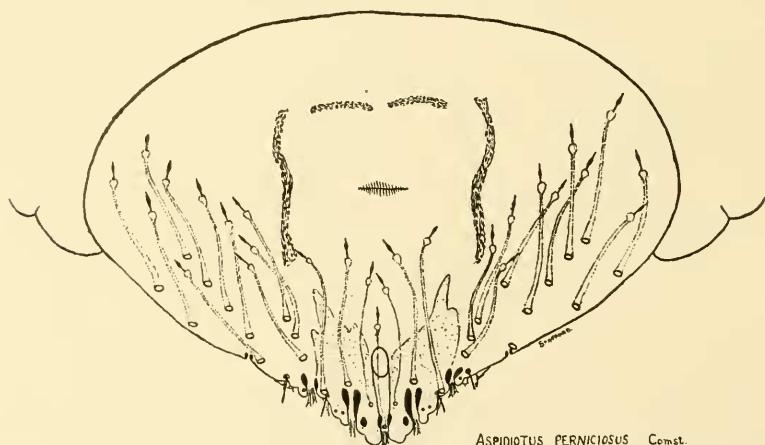


ASPIDIOTUS HEDERÆ Vall.

Macropores about thirty-six, at caudal margin and in a rough diagonal row. Tubules short, sub cylindric, truncate at apexes, which are not armed with pistons.

***Aspidiotus perniciosus*.**

Micropores nine—one between median lobes and one in median lobe, give rise to filiform capitate tubules, two in second lobe, and one in third lobe are non-tubulate.

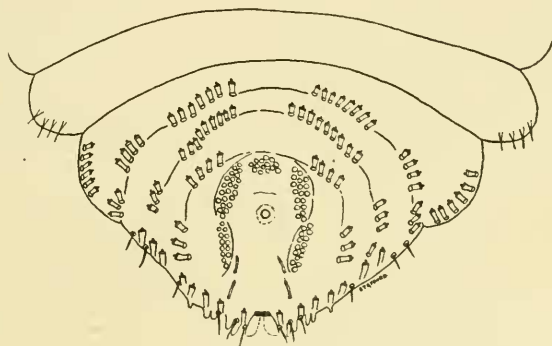


ASPIDIOTUS PERNICIOSUS Comst.

Macropores scattered, give rise to slender tapering tubules, ending capitate. All tubules armed terminally with fusiform stylet.

Aulocaspis rosæ.

Micropores four—two between second lobe and anal aperture. These give rise to minute, short tubules terminating in two capita, the terminal one being armed with a minute piston.



AULACASPIS ROSÆ Bouche.

Macropores numerous—situated in transverse rows at vestigial junctures of segments, and giving rise to very short sub cylindric tubules, which are truncate at tips and armed terminally with short pistons.

NOTE—These studies were made for the most part with Bauch and Lombocular number two and one-quarter inch objective.